

What is claimed is:

1 1. A CO remover, comprising:
2 an air mixer for mixing air with hydrogen-rich gas
3 including CO to generate mixed gas; and
4 a selective oxidative catalytic device for
5 selectively oxidizing the CO by having the mixed gas pass
6 through a selective oxidative catalyst bed,
7 the selective oxidative catalytic device including
8 a gas passing tube that has the selective
9 oxidative catalyst bed, and
10 a gas blending unit for blending part of the mixed
11 gas that is passing through the selective oxidative
12 catalyst bed further from an inner surface of the gas
13 passing tube and remaining part of the mixed gas that is
14 passing through the selective oxidative catalyst bed
15 nearer to the inner surface of the gas passing tube at a
16 point within the selective oxidative catalyst bed.

1 2. The CO remover according to Claim 1, further
2 comprising a cooling unit for cooling the selective
3 oxidative catalyst bed from outside upstream from the gas
4 blending unit.

1 3. The CO remover according to Claim 2, wherein the
2 cooling unit includes a channel adjacent to an outer

3 surface of the gas passing tube, through which cooling
4 medium passes.

1 4. The CO remover according to Claim 2, wherein the
2 cooling unit includes a heat sink adjacent to the outer
3 surface of the gas passing tube.

1 5. The CO remover according to Claim 1, wherein the
2 gas blending unit is formed from an element disposed so as
3 to partially obstruct the gas passing tube.

1 6. The CO remover according to Claim 5, wherein the
2 element projects inward from the inner surface of the gas
3 passing tube.

1 7. The CO remover according to Claim 5, wherein the
2 element is circularly disposed around the inner surface of
3 the gas passing tube.

1 8. The CO remover according to Claim 7, wherein 25 to
2 90% of an internal sectional area of the gas passing tube
3 is obstructed by the element.

1 9. The CO remover according to Claim 7, wherein the
2 element is a washer ring element.

1 10. The CO remover according to Claim 1, wherein an
2 internal diameter of the gas passing tube downstream from
3 the gas blending unit is smaller than an internal diameter
4 of the gas passing tube upstream from the gas blending
5 unit.

1 11. The CO remover according to Claim 10, wherein an
2 internal sectional area of the gas passing tube downstream
3 from the gas blending unit is 25 to 90% of an internal
4 sectional area of the gas passing tube upstream from the
5 gas blending unit.

1 12. The CO remover according to Claim 1, wherein a
2 length between a start of the selective oxidative catalyst
3 bed in a direction of a flow of the mixed gas and the gas
4 blending unit is no shorter than 1/3 of a length between
5 the start of the selective oxidative catalyst bed and an
6 end of the selective oxidative catalyst bed in the
7 direction of the flow of the mixed gas.

1 13. A reaction apparatus, comprising a catalytic
2 reaction device in which gas reacts with exothermic
3 reaction by passing through a catalyst bed,
4 the catalytic reaction device including:
5 a gas passing tube that has the catalyst bed; and
6 a gas blending unit for blending part of the gas

7 that is passing through the catalyst bed further from an
8 inner surface of the gas passing tube and remaining part
9 of the gas that is passing through the catalyst bed nearer
10 to the inner surface of the gas passing tube at a point
11 within the catalyst bed.

1 14. The reaction apparatus according to Claim 13 ,
2 wherein the catalytic reaction device further includes a
3 cooling unit for cooling the catalyst bed from outside
4 upstream from the gas blending unit.